Treatment of Venomous Snakebite

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Southwest
STARS
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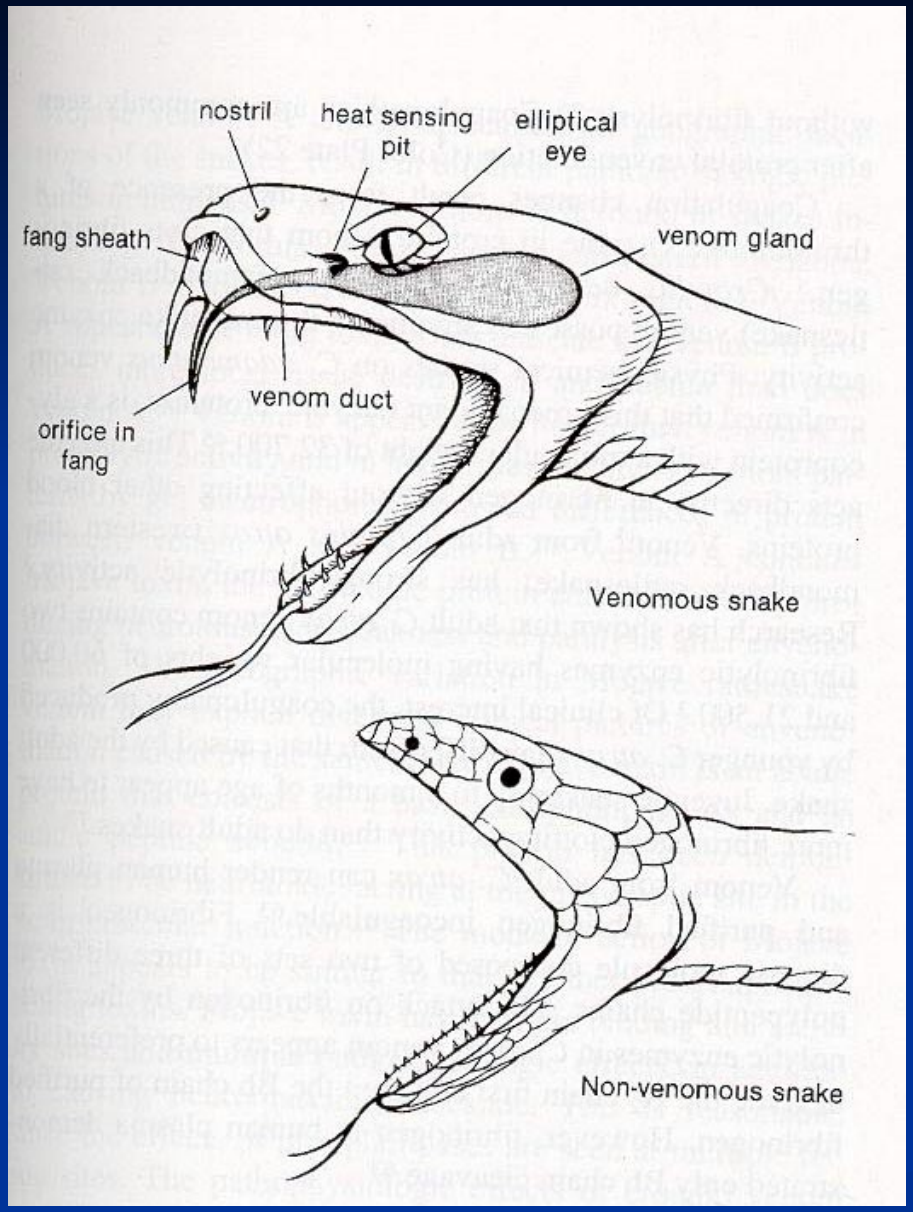
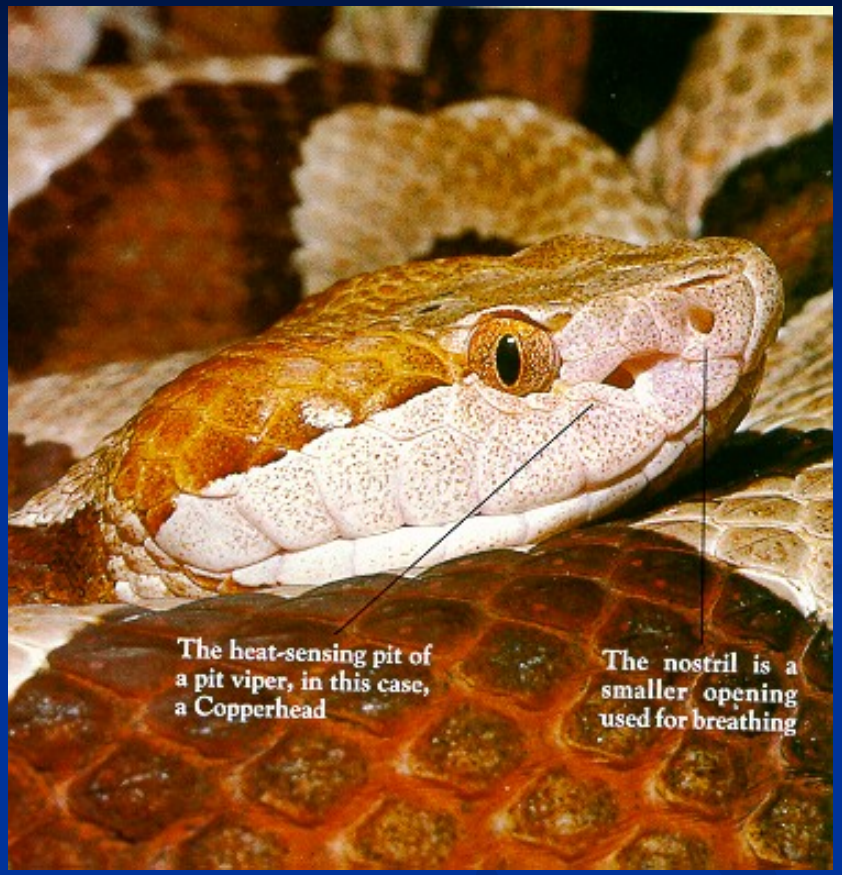
Prevention

- #1: Don’t Play With The Snake
- #2: Control Rodents (snake food)
- #3: Don’t Mess With The Snake
- #4: Don’t Reach or Step Into Unseen Areas
- #5: Don’t Tease, Annoy, Fiddle With or Otherwise Scare The Snake

Southwest


nostril
heat sensing pit
elliptical eye
fang sheath
venom gland
venom duct
orifice in fang
Venomous snake
Non-venomous snake


The heat-sensing pit of a pit viper, in this case, a Copperhead
The nostril is a smaller opening used for breathing

Snakebite First Aid

- #1: Don’t Panic
- #2: Don’t Make Things Worse
- #3: Get To Medical Care As Quickly As Possible

Snakebite First Aid
Things That Don’t Work:

- Alcohol (External or Internal)
- Electrical Shock (Stun Gun)
- ’Cut and Suck’
- Tourniquets
- Ice

Cutter Kit: Do not use this kit!

Snakebite First Aid

- ‘Extractor Pump’

  -One study showed effective if applied within 5 minutes of bite

  -Recent study shows **not** effective, and may lead to increased necrosis at bite site

First Aid

- Pressure-Immobilization Technique
  -Appears to work in elapid, sea snake, most Australian snakes

  -Usefulness in bites by hemo/cytotoxic predominant venoms is not clear, MAY increase tissue necrosis--research is ongoing

PRESSURE-IMMOBILIZATION TECHNIQUE FOR VENOM SEQUESTRATION

- Place a cloth or gauze pad of approximate dimensions 6 to 8 cm square x 2 to 3 cm thick directly over the bite site (optional)
- Wrap the extremity with an elasticized bandage or rolled gauze at lymphatic-venous occlusive occlusive pressure
- Distal fingertips and toes should remain pink; arterial pulsations should be present (proper capillary refill)

Pressure Immobilization-Continued

- Apply a splint
- Keep bandages in place until the victim is brought to medical attention
- Anticipate swelling and loosen bandages if arterial circulation is compromised

First Aid

- Remove rings, any constricting items
- Immobilize at heart level
- Keep patient at rest as much as possible
- Bring in the snake??

First Aid

- Constricting band (NOT tourniquet) MAY be of some use if applied properly

- If use constriction band or pressure immobilization, DO NOT REMOVE until at medical facility with life support ready.

Venom Types

- All snake venoms have neurotoxic and hemo-cytotoxic components
- Vipers, including old world vipers, pit vipers (crotalids) tend to have hemo/cytotoxic predominant componets

Venom Types

- Elspids (cobras, kraits, coral snakes) sea snakes, and most Australian snakes have neurotoxic predominant venom

- No hard/fast rules: King cobra bite can cause serious tissue destruction, several species of crotalids have significant neurotoxic effects

Clinical Evaluation

- Not all bites result in injection of venom
- Not all envenomations require antivenom treatment
- Most snakebite victims will survive
- Death from snakebite typically takes hours to days

Clinical Evaluation

- Hemo/cytoxic predominant venoms usually show:

  -Moderate to severe swelling, starting at bite site
  -Moderate to severe pain at the bite site
  -In crotalid bites, decreased platelets are one of the early signs of systemic envenomation.

Clinical Evaluation

- Neurotoxic predominant bites:

  -Can be almost painless
  -Show no symptoms for hours, followed by rapid deterioration

  -If any neurologic signs/sx present, treat as a significant envenomation

Grading Envenomation

- **None**: No local or systemic signs/sx- observe for delayed onset of symptoms

- **Mild:** Local swelling and pain, no systemic signs or symptoms

Grading Envenomation

- **Moderate:** Swelling beyond local site, systemic signs/sx (nausea, vomiting, paresthesias, hypotension, difficulty breathing, focal neurologic signs

- **Severe:** Marked swelling of extremity, eccyhymosis, shock, coagulopathy, respiratory failure, paralysis, EKG changes

Treatment

- Institute life support measures: Manage the ABC's
  -Monitor, 2 IV's, fluids if needed for hypotension
  -Labs: CBC, glu, BUN/creat, 'lytes, coags, UA, draw for T+C
  -EKG, ETOH, ? Tox screen

Treatment

- Treat the wound

  -Clean/irrigate

  -Address tetanus status (tetanus-prone wound)

  -FB (fang?) in wound?

  -Abx??

Antivenin Required?

- Moderate to Severe envenomations usually require antivenin
- Mild may or may not require antivenin
- In cases of neurotoxic-predominant bites, any significant neurological sign/sx is reason to treat with anitvenin

Antivenin Administration

- Skin test or no?
- Pre-treat with H-1 and H-2 blockers
- Have EVERYTHING you need to deal with a severe allergic reaction AT THE BEDSIDE
- Mix antivenin by swirling, not shaking

Antivenin Administration

- Dilute antivenin 1:5 or 1:10 in NS, administer first 10 cc's VERY slowly, observing for allergic reactions
- If no reaction, increase rate to give first dose over approx 60 minutes

How Much to Give?

- Wyeth Crotalid Polyvalent Antivenin

- Give in lots of 5 vials:

  -Mild: 5 vials (if any needed)

  -Moderate: 5-10 vials

  -Severe: 10 vials

Wyeth Antivenin

- Continue to give in lots of 5 vials until pain relived, swelling stops, platelets normalize

- If 10 or more vials of antivenin used, virtual certainty of serum sickness in 5-25 days-Warn patients of signs/sx, and be ready to treat.

CroFab

- Crotalid Polyvalent Antivenin, Fab fragment
- Give 4-6 vials over 1 hour and observe.
- If symptoms still present, give additional doses of 4-6 vials until symptoms controlled.
- Give 2 vials every 6 hours for 18 hours

Pitfalls

- Kids generally require higher doses of antivenin
- Swelling may be VERY impressive: Compartment syndrome in snakebite is uncommon, do not perform fasciotomy unless elevated compartment pressure is documented

Pitfalls

- Be ready for any/all allergic reactions
- Fear/anxiety can mimic some neurological signs
- Fab antivenins are less likely to cause severe reactions, however it CAN happen

My Front Yard, San Antonio TX, April ’03

4-foot Crotalus atrox